

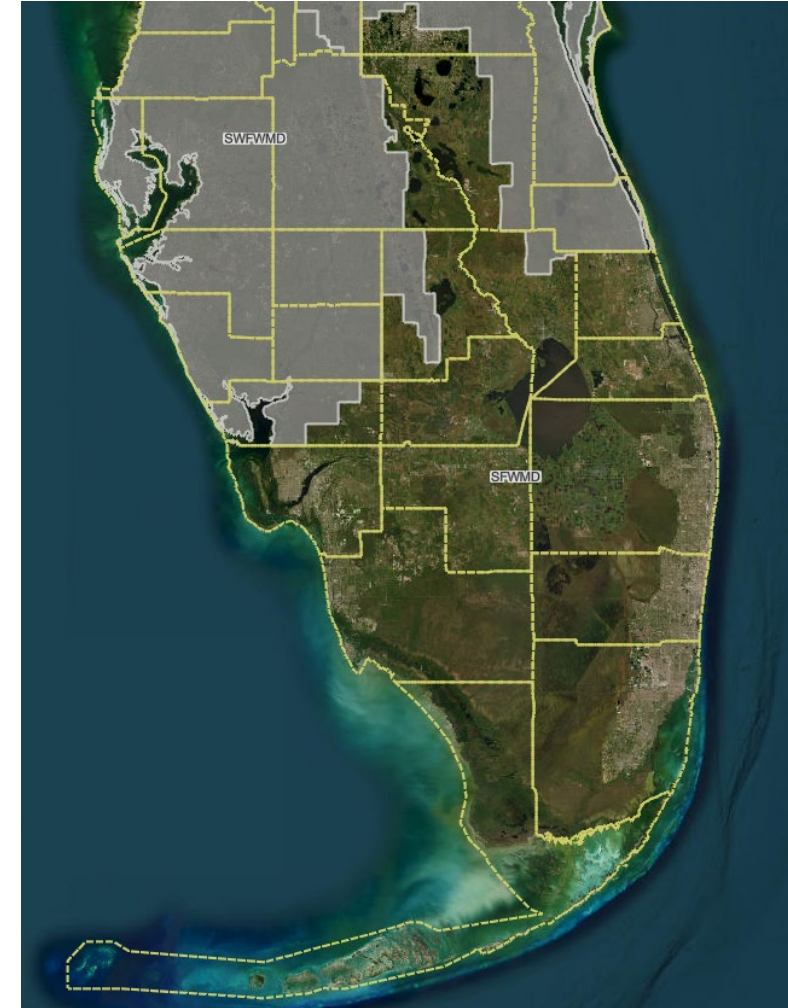


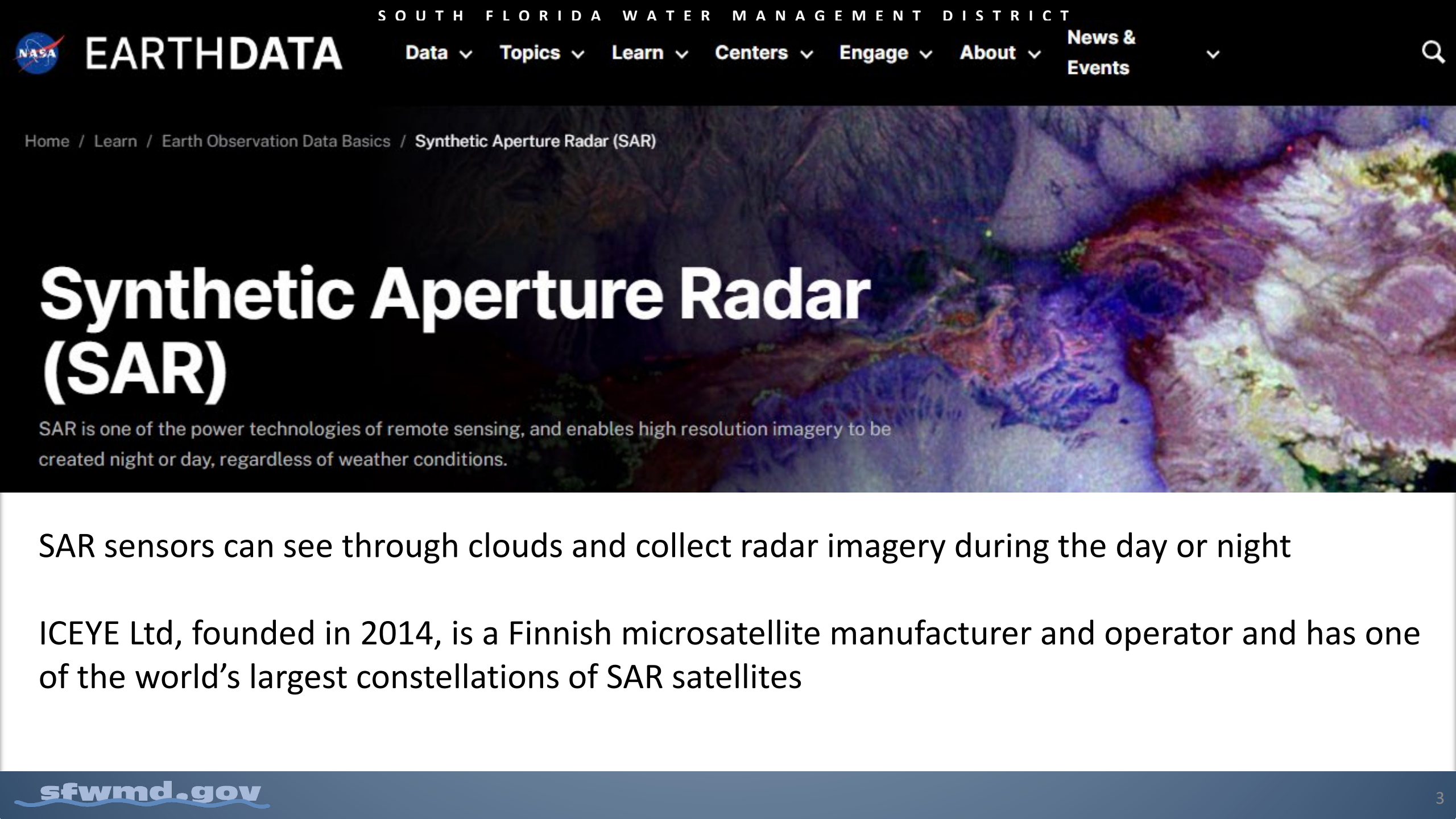
ICEYE Flood Insights: Gaining a Regional Perspective on Flooding

Christine Carlson, Geospatial Architect, SFWMD Geospatial Services

South Florida Water Management District (SFWMD)

- SFWMD is a **regional governmental organization** that manages water resources within a 16-county area extending from Orlando to the Florida Keys
- The District's interest in gaining a better perspective on regional flood occurrence is tied to our Flood Protection Level of Service Program and Sea Level Rise and Flood Resiliency Plan
- Flood occurrence / recurrence information supports model verification and mitigation / adaptation planning
- Flood pattern, extent and depth will be used to inform a flood occurrence metric that is one of 15 metrics identified to track climate impacts in South Florida.





Home / Learn / Earth Observation Data Basics / Synthetic Aperture Radar (SAR)

Synthetic Aperture Radar (SAR)

SAR is one of the power technologies of remote sensing, and enables high resolution imagery to be created night or day, regardless of weather conditions.

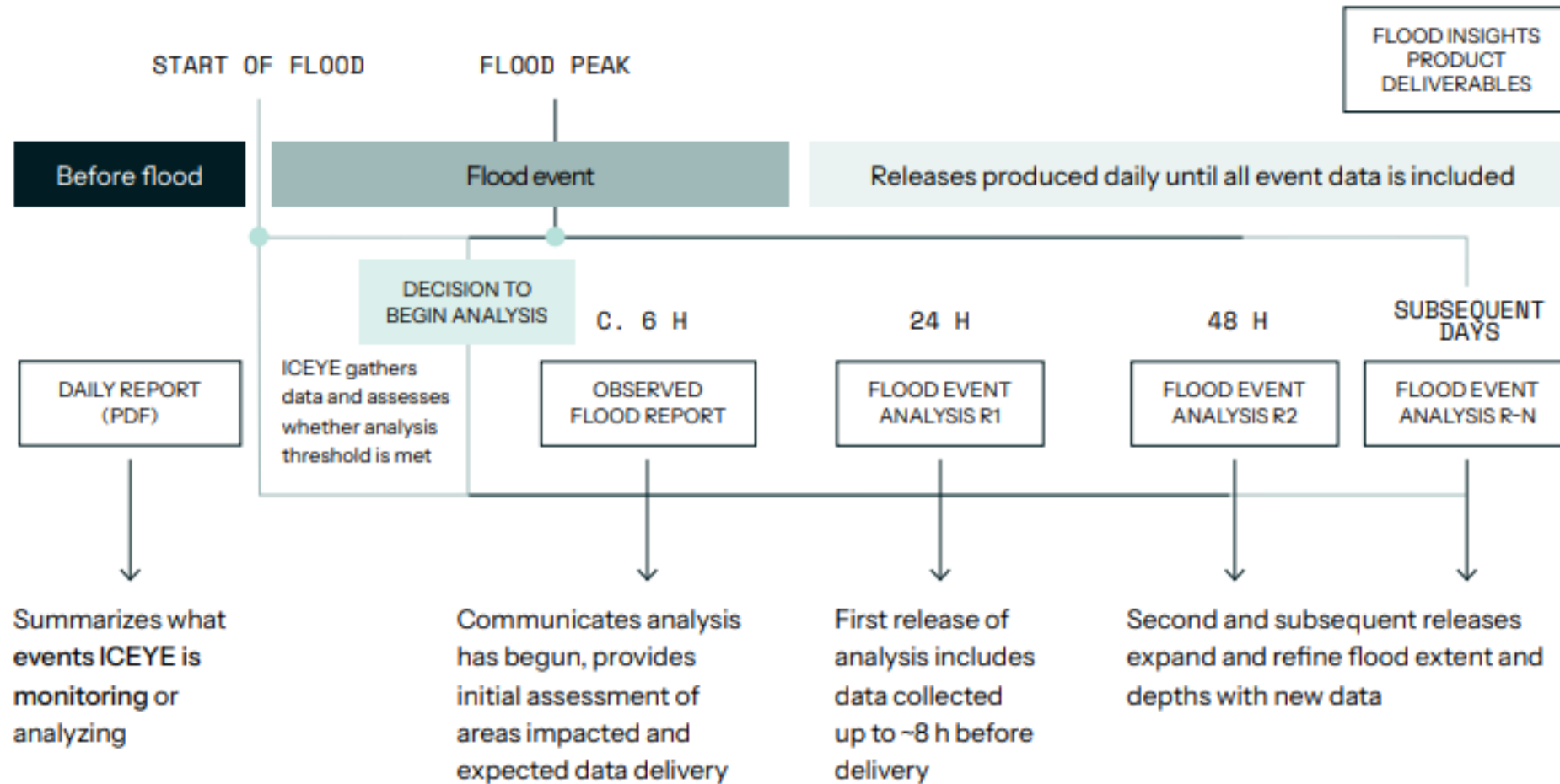
SAR sensors can see through clouds and collect radar imagery during the day or night

ICEYE Ltd, founded in 2014, is a Finnish microsatellite manufacturer and operator and has one of the world's largest constellations of SAR satellites

ICEYE Flood Insights

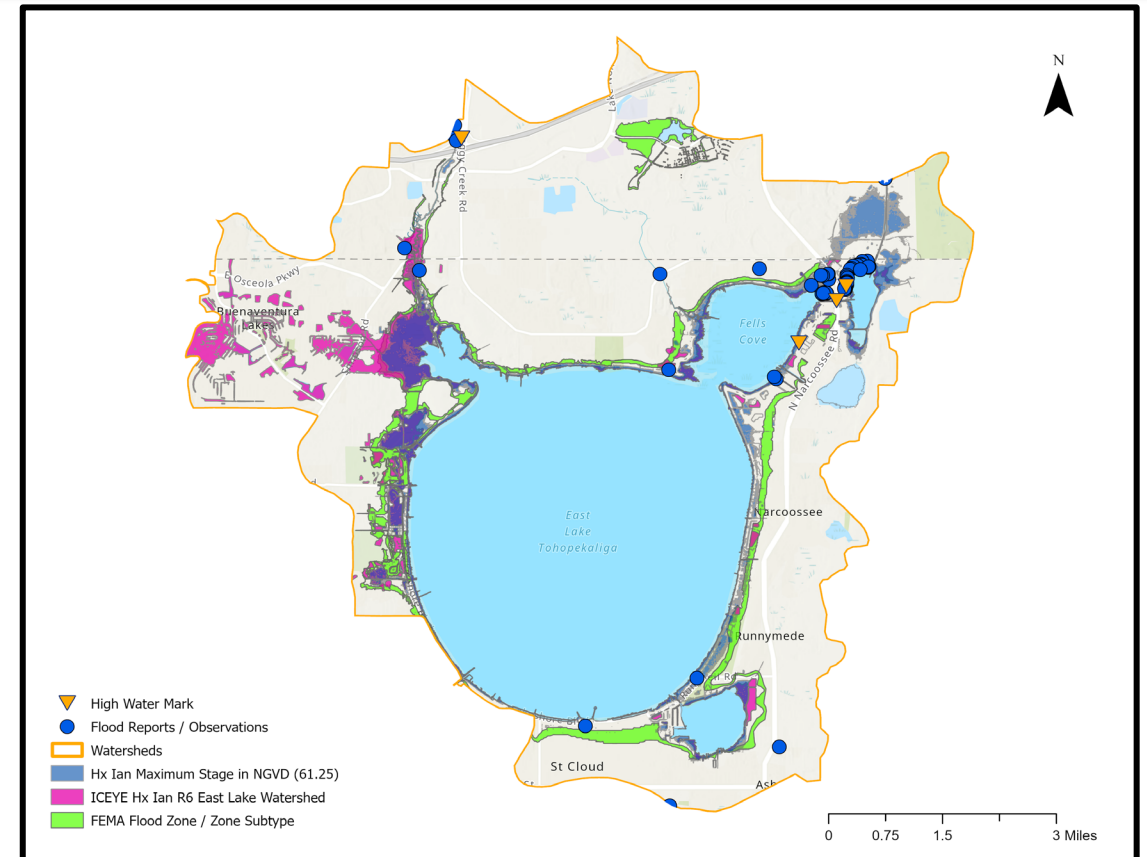
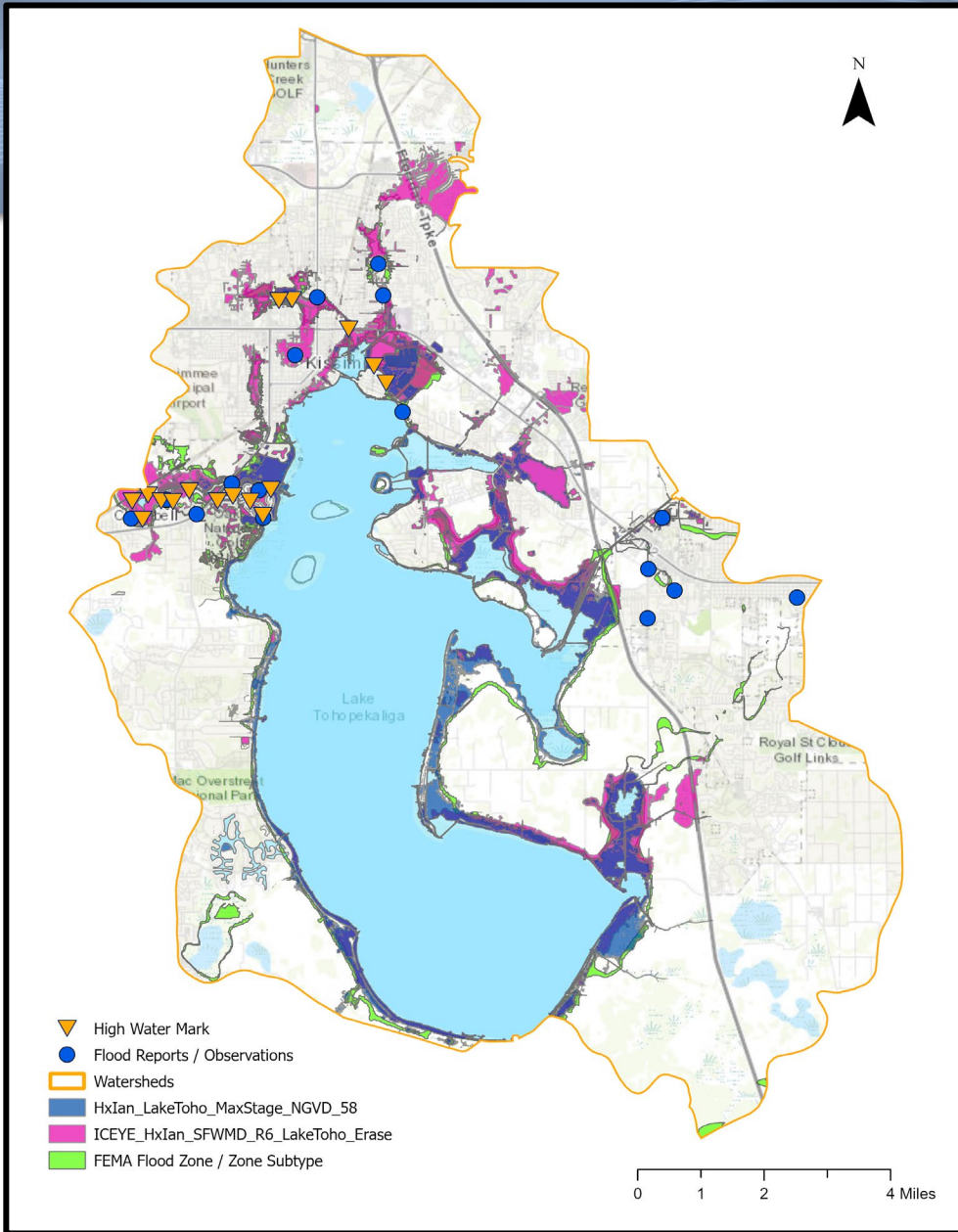
- **Analysis ready product** that includes a depth raster and vector data for impacted buildings, flood extent, and analysis area metadata
- Provides maximum flood depth and extent over the duration of an event
- Depth raster is derived from a variety of remote sensing sources (open source imagery, Sentinel-1, digital terrain models) including ICEYE's high resolution (4 meter) SAR sensors
- **Uses auxillary information** to validate flooding location and depth including:
 - River gauges
 - Stage gauges
 - Social media posts
 - **SFWMD Flood Survey Reports**
 - USGS, SFWMD and local government high water marks

ICEYE Flood Insight Event Life Cycle



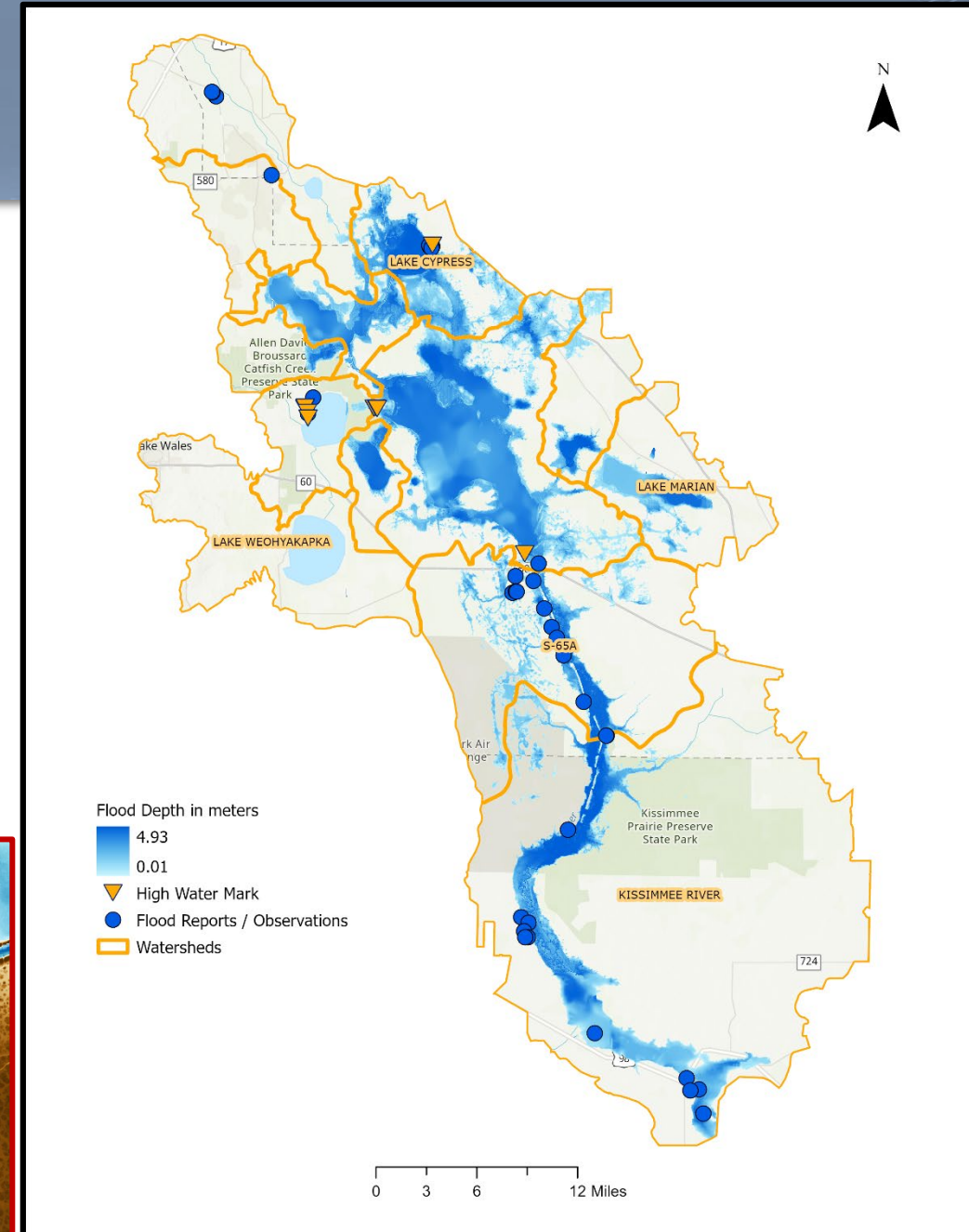
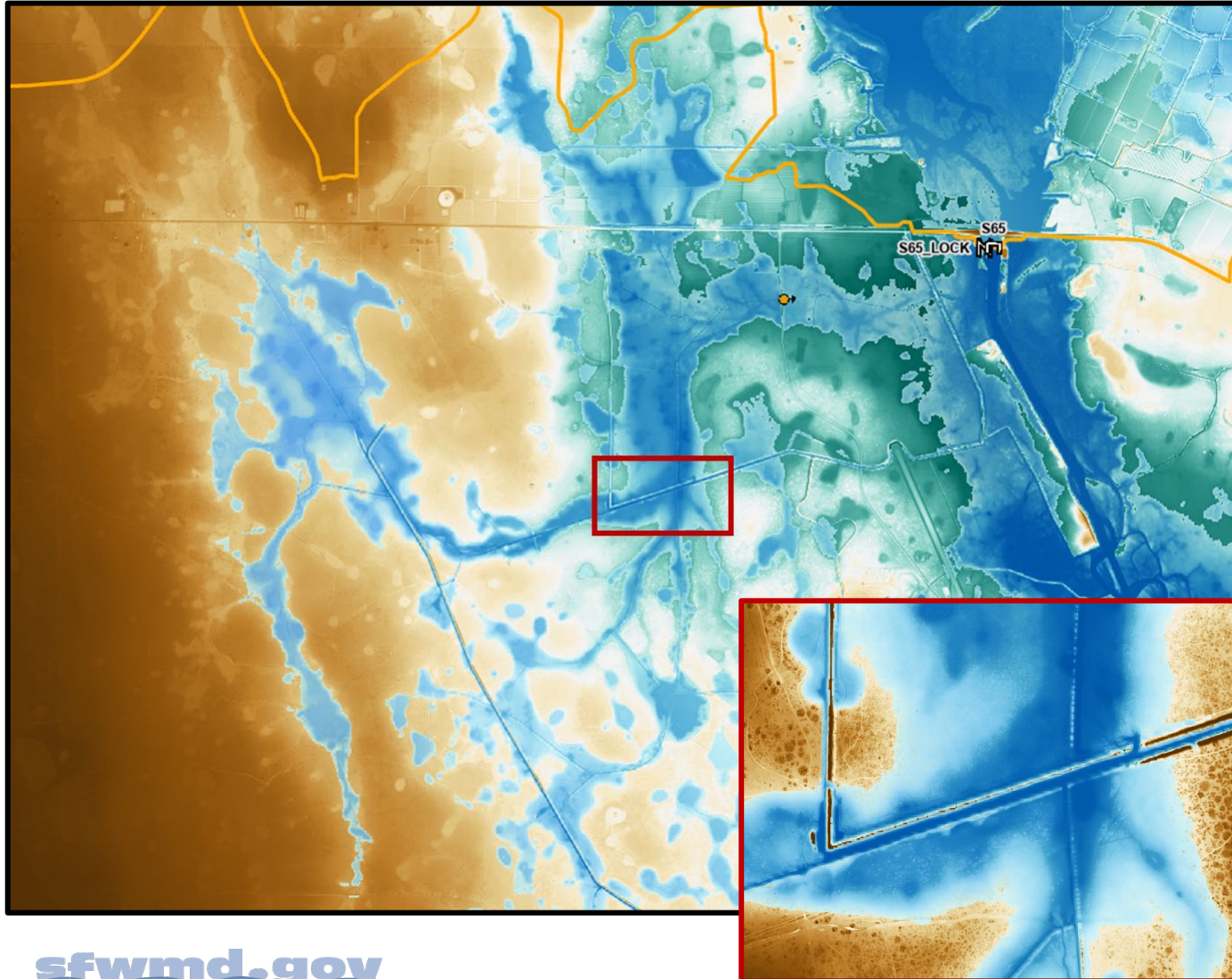
WATER MANAGEMENT DISTRICT

Hurricane Ian: Lake Toho and East Lake Toho ICEYE versus Gauge Data

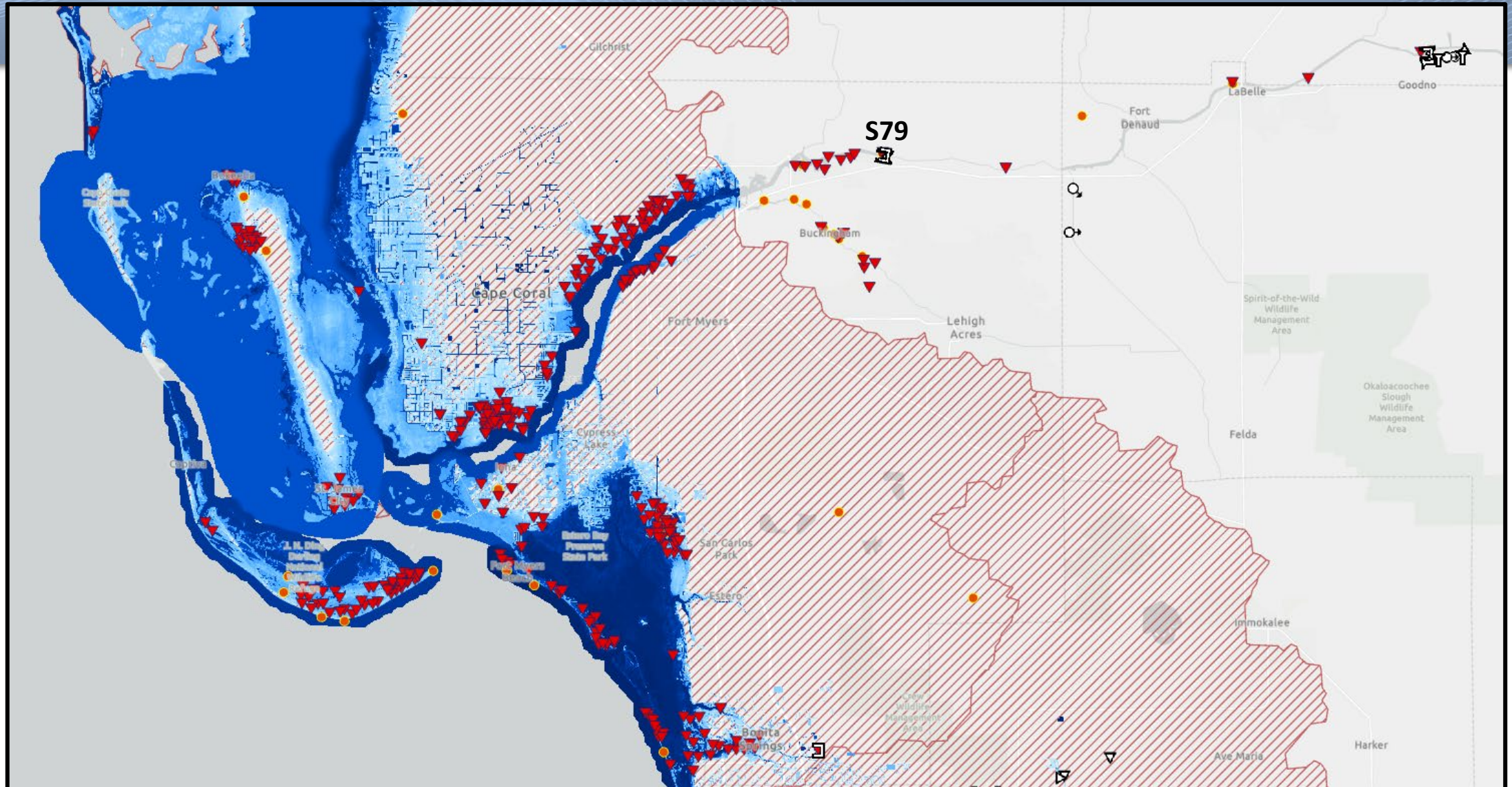


Combination of two sources provide best characterization of flood extent

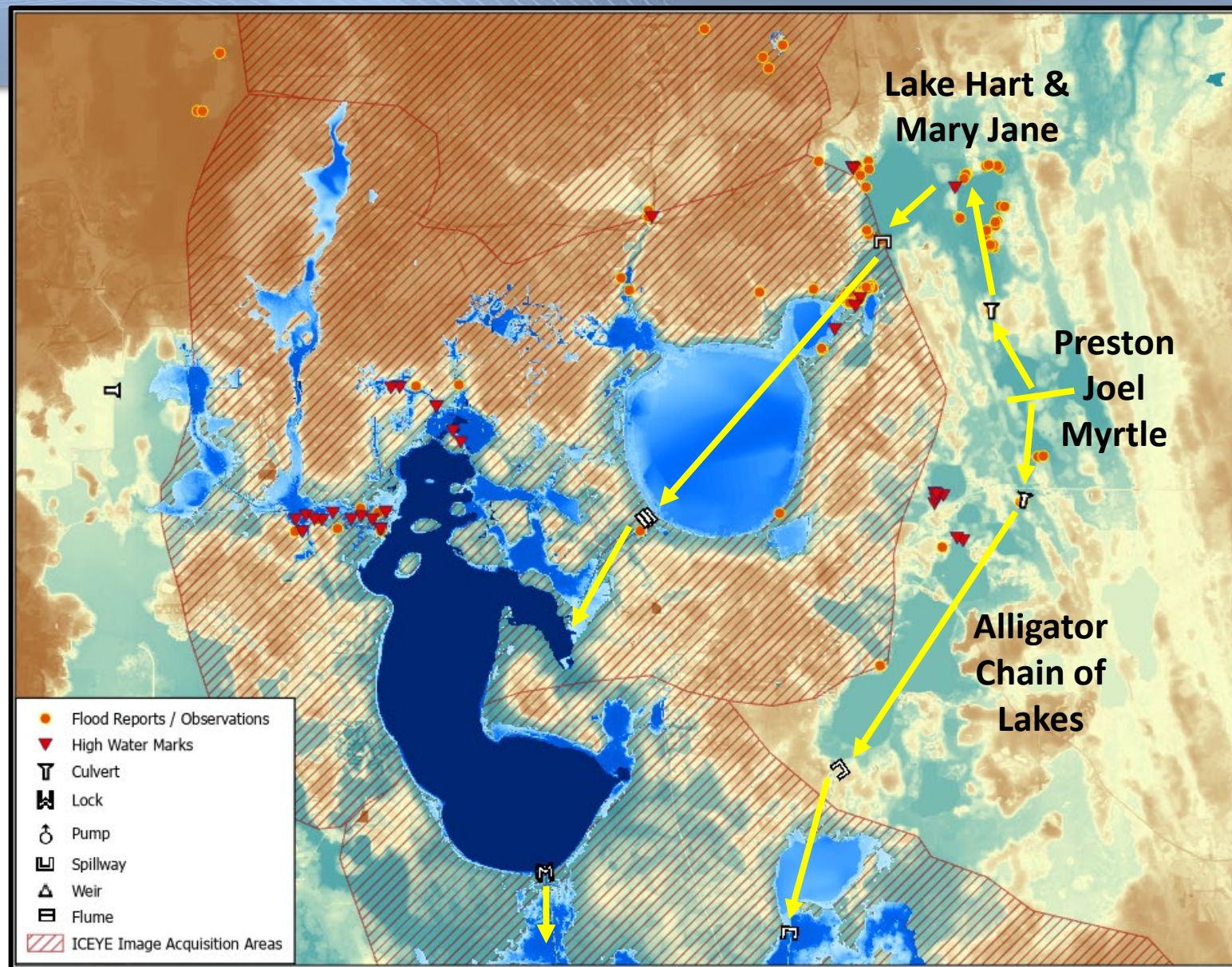
Hurricane Ian: Kissimmee River Restoration Project Area



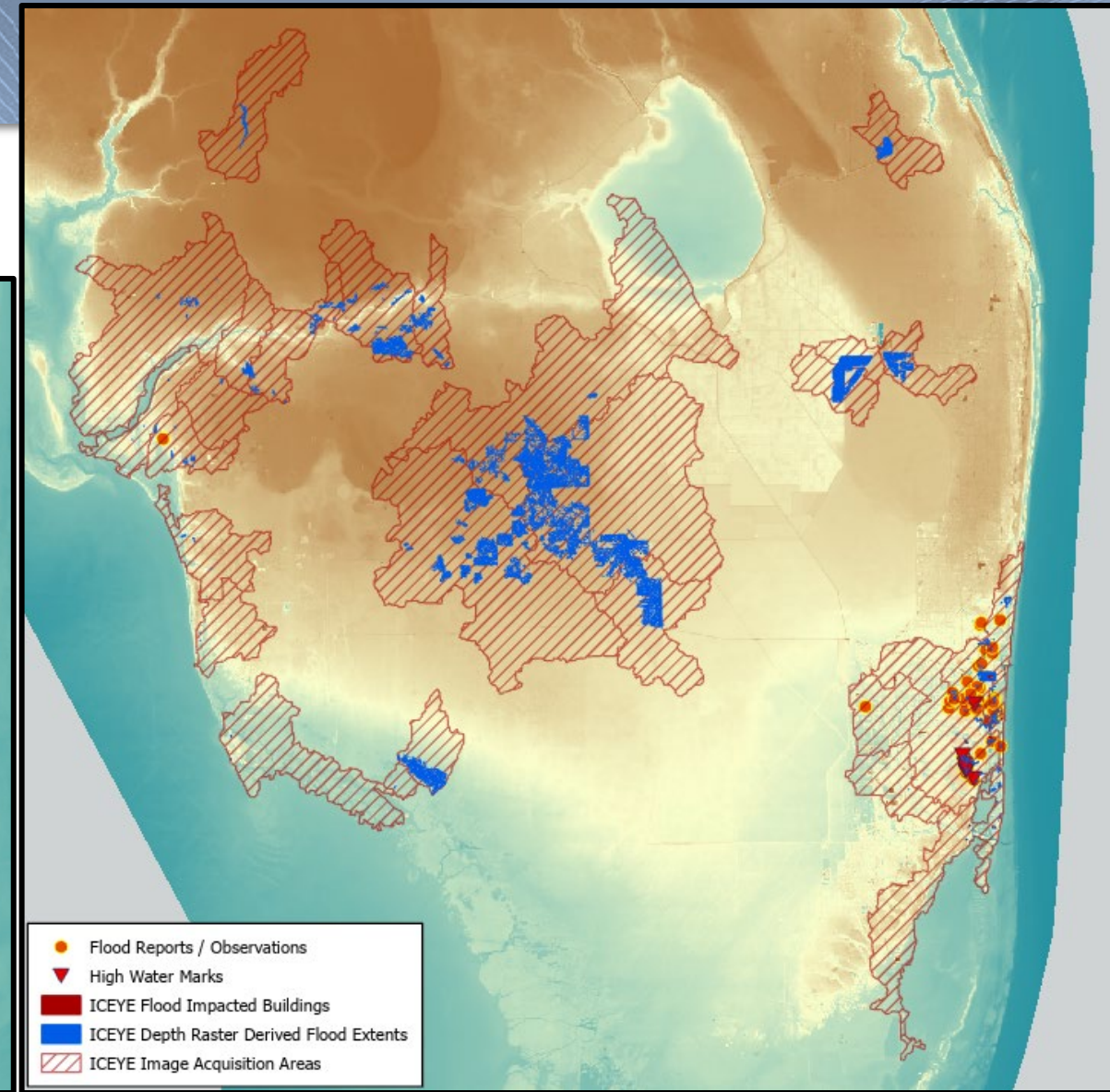
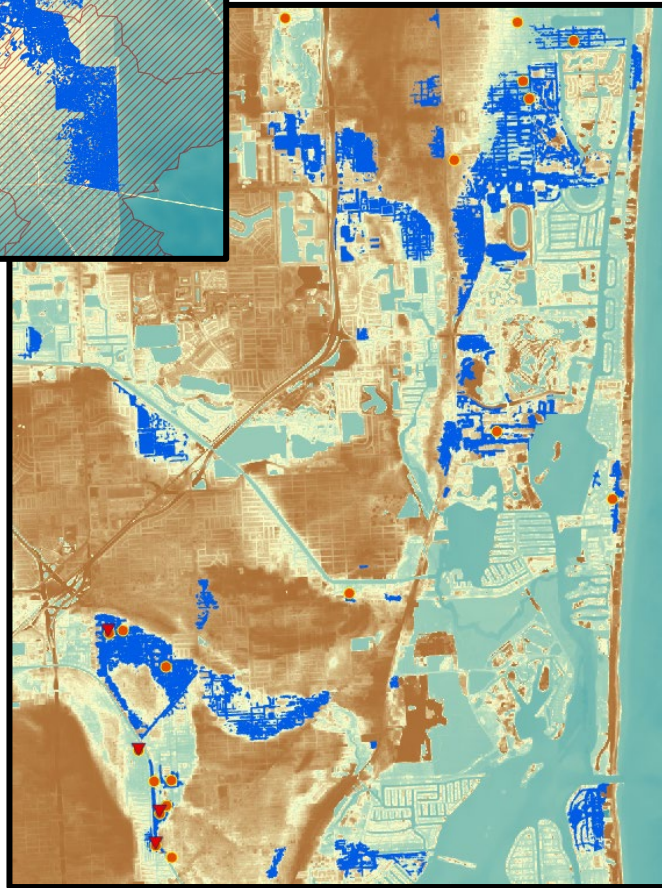
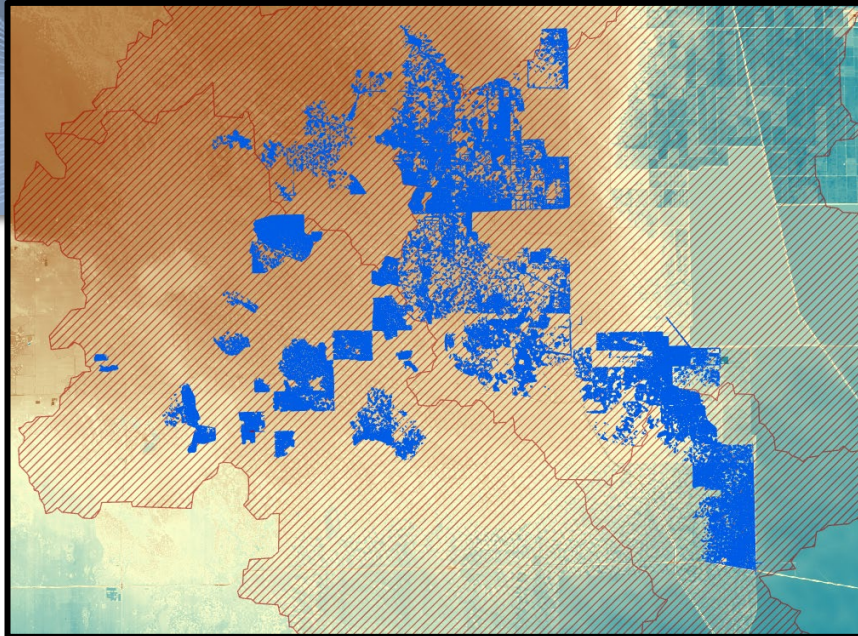
Hurricane Ian: Southwest Florida Area of Interest “Short-Comings”



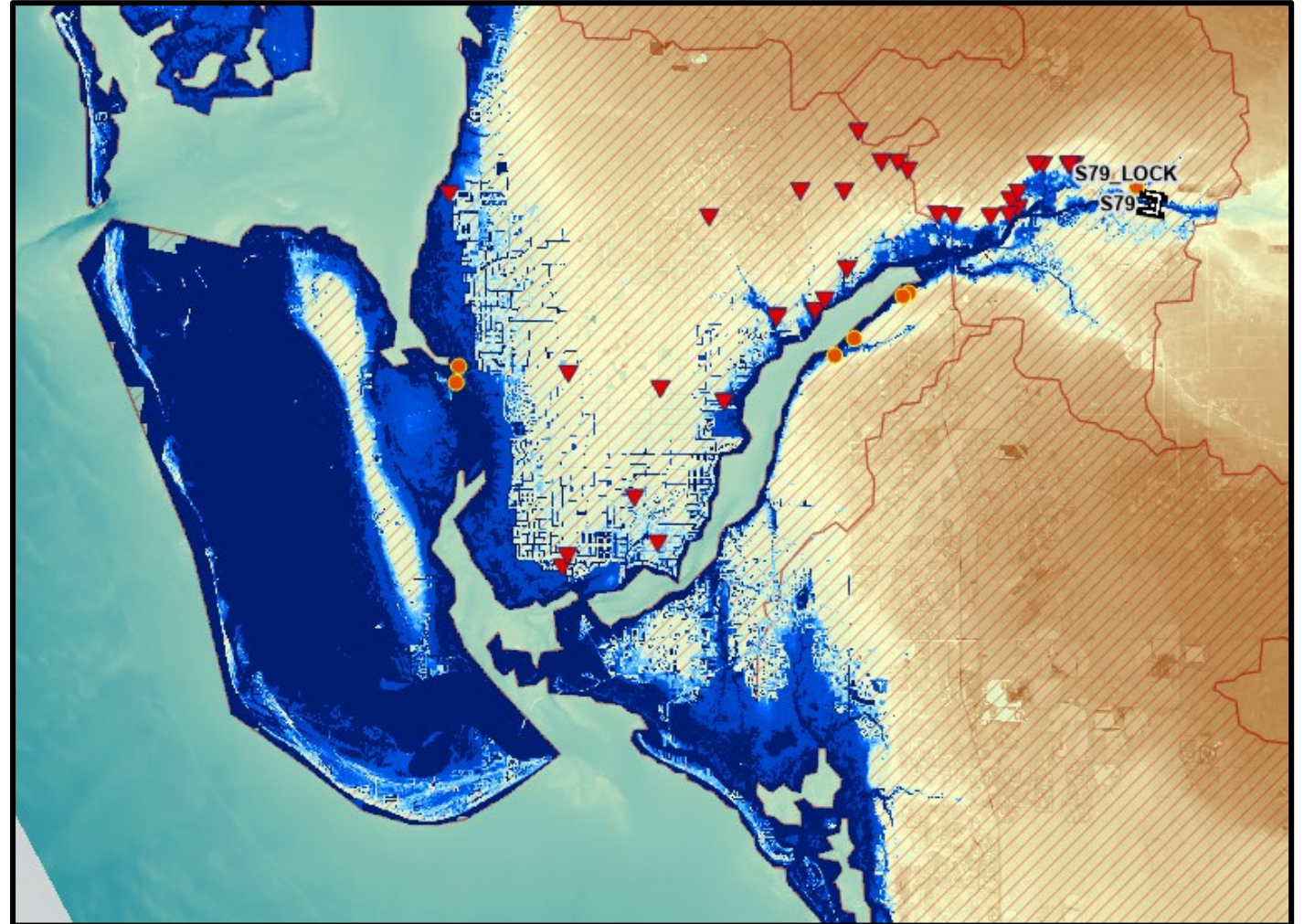
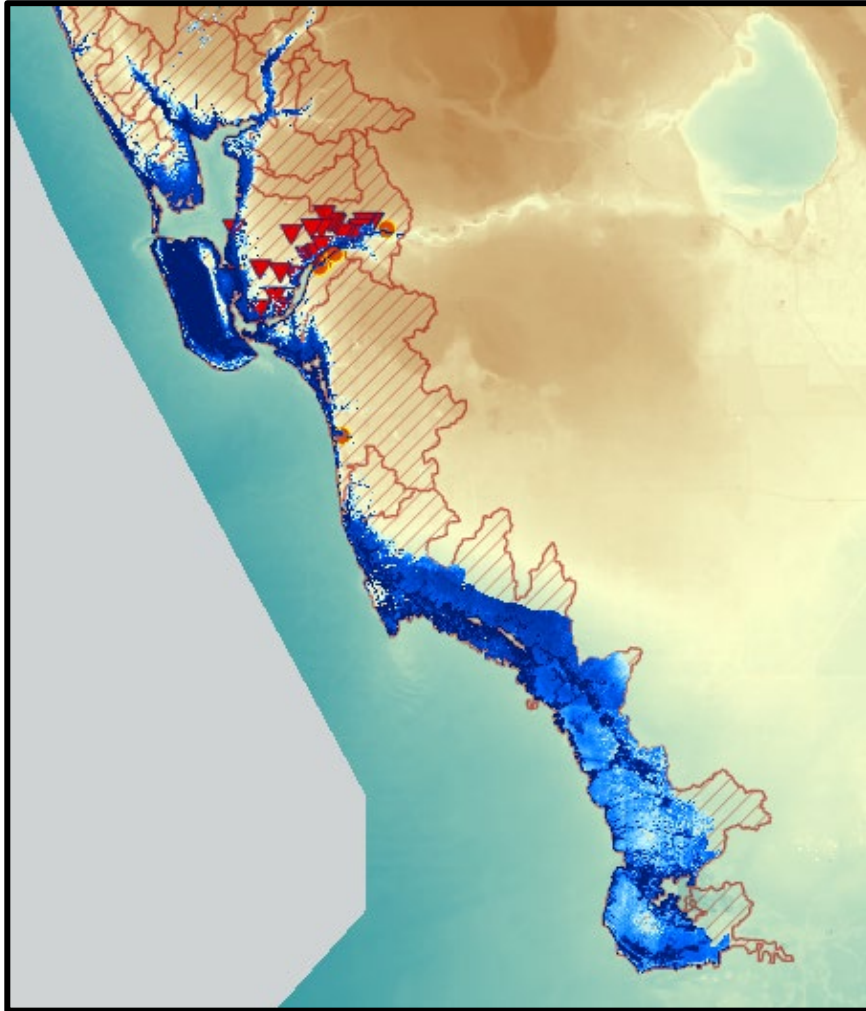
Hurricane Ian: Upper Kissimmee Area of Interest “Short-Comings”



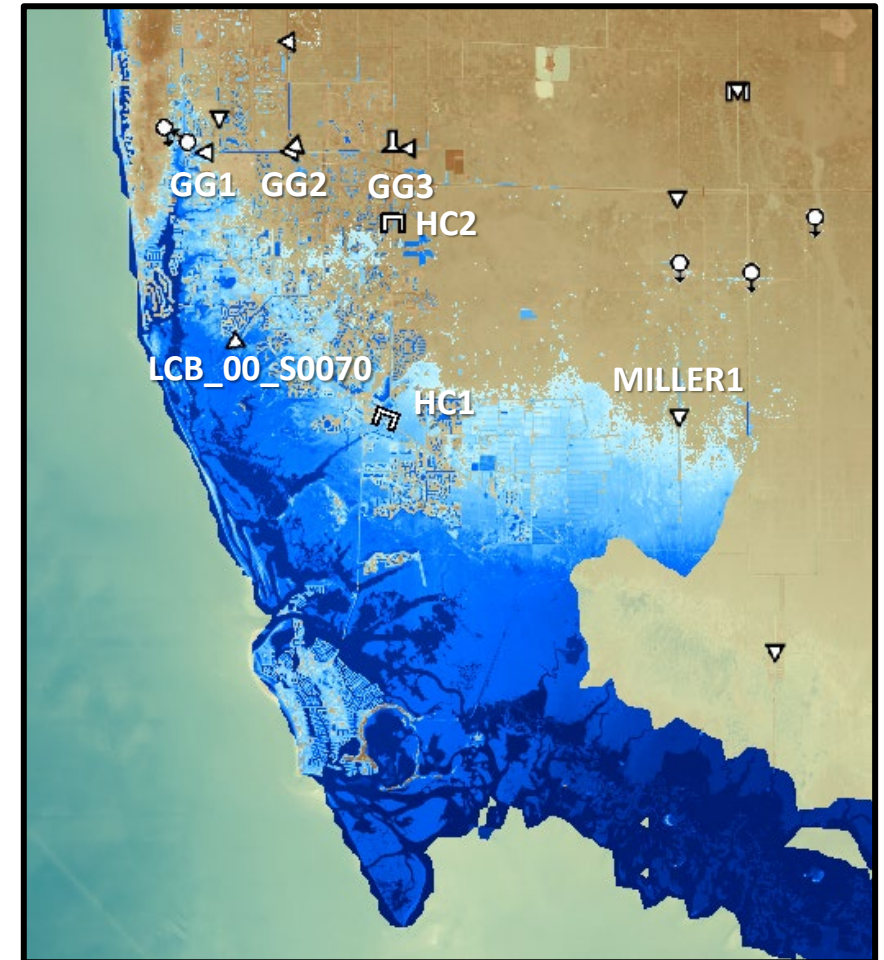
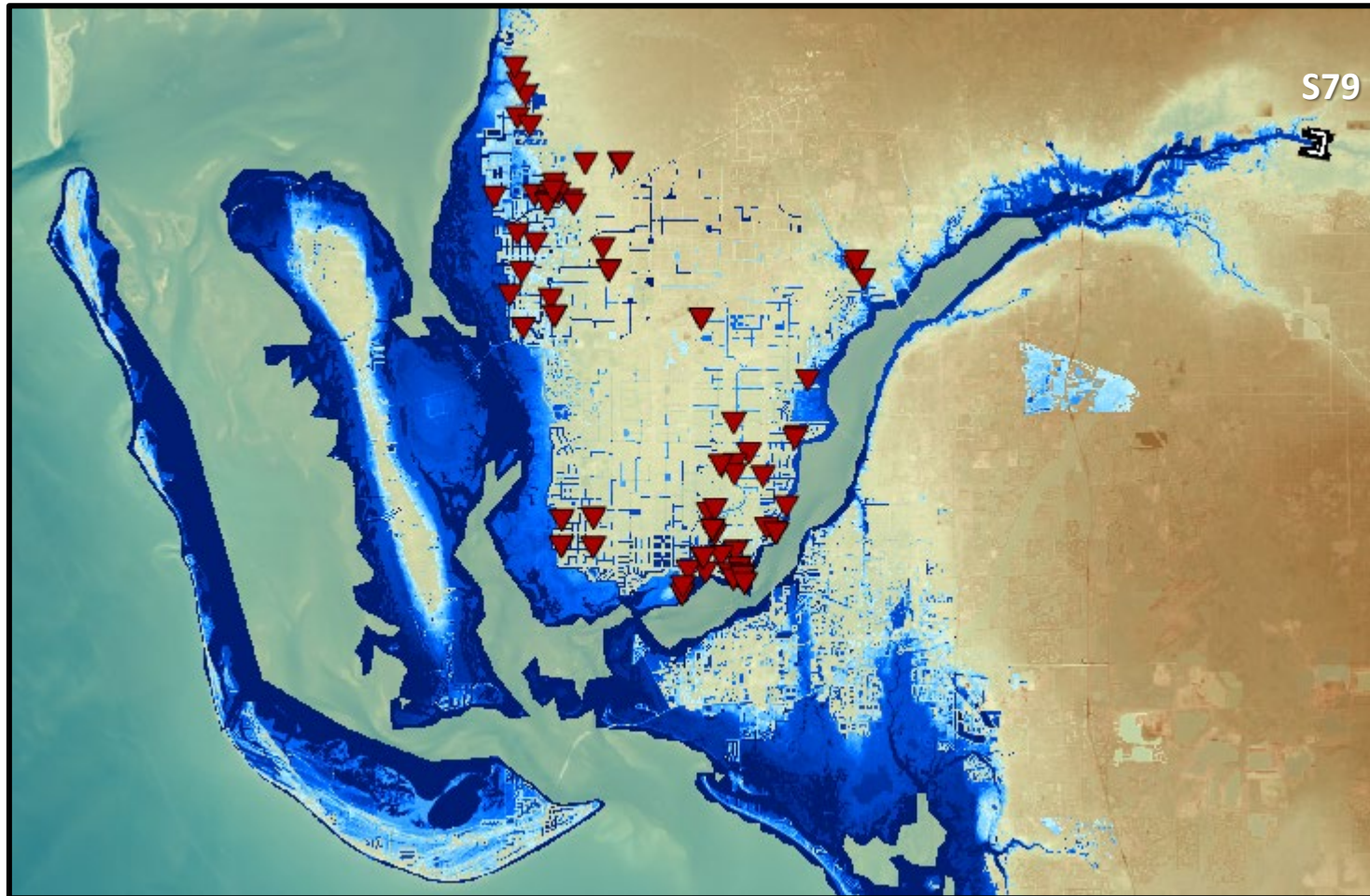
June 2024 Rain Event



Hurricane Helene



Hurricane Milton



Flood Verification

Report Flooding and Early Concerns



The information collected in this survey is used by agencies to better understand flooding conditions in Central and Southern Florida. This survey does not replace the need to contact your local drainage reporter.

All flooding that poses a risk to your home or property should be reported to your local drainage reporter. Life-threatening flooding should always be reported to 911.

To learn who to contact, go to sfwmd.gov/HeadLocket and enter your address.

Questions with a red * are required.

Photos (Optional)

Submit up to 3 photos.

Drop image here or select image (maximum number of files allowed: 3)

Flood Location*



SFWMD Flood Observation Survey

sfwmd.gov/FloodingApp

SFWMD HWM Survey



Questions with a red * are required.

Collecting organization

Recorder name*

Recorder email*

Deployment number

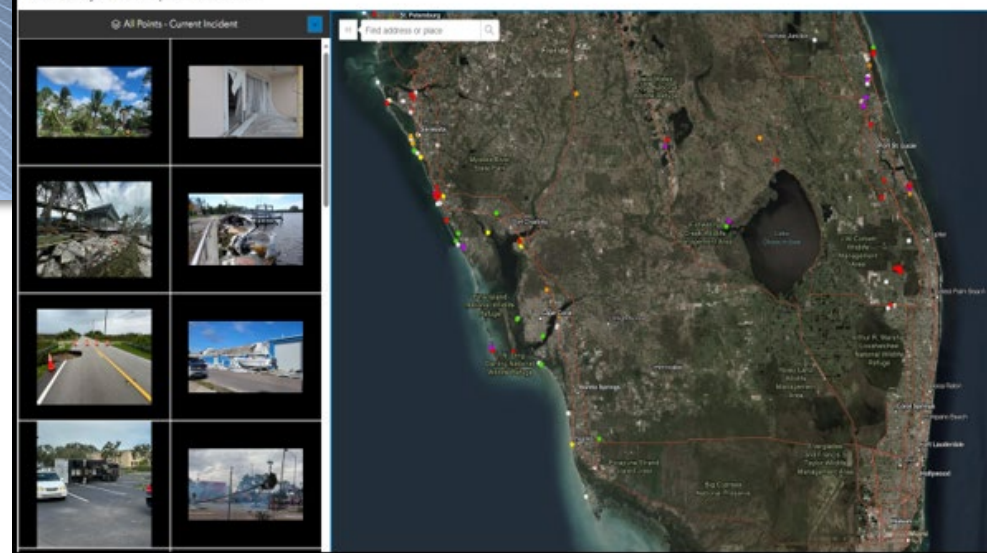
Was High Water Mark tag placed?*

☐ Yes

☐ No

SFWMD High-Water Mark Survey

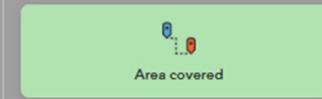
Photo Gallery - Click on a photo to see details



Quick Capture Helicop...

Collector

Tap to start / stop



Damage Category



Layer Legend

Public Flood Observations Surveys with Contact Info

Flooding Concerns - Flooding Concerns Flooding Email - Contact Us Email

Reporting Category:

Flooding

Flooding Concern

County Boundaries

High Water Marks

Florida WMD Boundaries

WMD NAME

SWFWMD

SWFWMD

SWFWMD

SWFWMD

SWFWMD

SWFWMD

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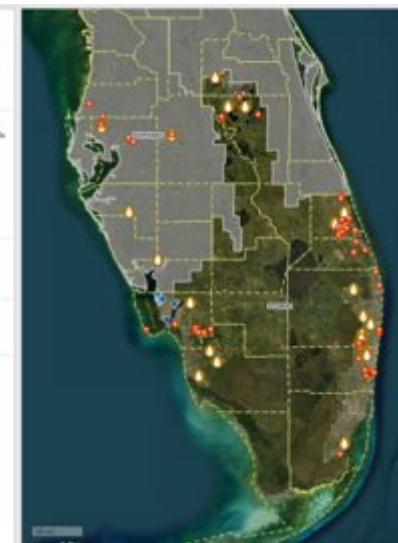
SWFWMD

SWFWMD

SWFWMD

SWFWMD

SWFWMD



URISA GIS
Corp Curated
Social Media
Reports

Flooding /
Flooding
Concerns
Emails

SFWMD Quick Capture Tool

**To report flooding in South
Florida, please go to
sfwmd.gov/FloodingApp**

Thank You